

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.116

Serial Number: 09/816,602

Filing Date: March 23, 2001

Title: DEVICE ENCLOSURES AND DEVICES WITH INTEGRATED BATTERY

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IN THE CLAIMS

Please amend the claims as follows:

1 - 10. (Cancelled)

11. (Previously presented) An electrically powered device comprising:
a first shell, wherein the first shell forms a portion of an enclosure for the device, the first shell having a concave interior surface and a convex exterior surface; and
a battery integrated with the first shell, wherein the battery is formed as one or more layers integral to the first shell; and
a second shell enclosure portion, wherein the first shell and the second shell enclosure portions form a case adapted to enclose at least a portion of the electrically powered device, and wherein the first shell portion and the second shell portion are attached by a living hinge.

12 - 19. (Cancelled)

20. (Previously presented) The electrically powered device of claim 66, wherein the battery is formed on the first shell.

21. (Previously presented) The electrically powered device of claim 20, wherein the battery is formed on the interior surface.

22. (Original) The electrically powered device of claim 20 further comprising a protective layer placed over the battery.

23. (Previously presented) The electrically powered device of claim 66, wherein the battery is sputtered on the interior surface.

24. (Original) The electrically powered device of claim 23 further comprising a protective layer placed over the battery.

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25. (Original) The electrically powered device of claim 20 further comprising:
 a trace; and
 a site adapted to receive an electrically powered component, wherein the battery, the trace and the electrically powered component form a portion of a circuit.
26. (Previously presented) The electrically powered device of claim 66, wherein the battery is formed on the exterior surface of the first shell, said first shell further comprising electrical contacts for the battery which are positioned near the interior surface of the first shell.
27. (Previously presented) The electrically powered device of claim 26 further comprising:
 a trace on the interior surface of the first shell; and
 a site positioned on the interior surface of the first shell adapted to receive an electrically powered component, wherein the battery, the trace and the electrically powered component form a portion of a circuit.
28. (Previously presented) An electrically powered device comprising:
 a first shell, wherein the first shell forms a portion of an enclosure for the device, the first shell having a concave interior surface and a convex exterior surface;
 a battery integrated with the first shell, wherein the battery is formed as one or more layers integral to the first shell; and
 a capacitor integrated within the first shell.
29. (Previously presented) An electrically powered device comprising:
 a first shell, wherein the first shell forms a portion of an enclosure for the device, the first shell having a concave interior surface and a convex exterior surface;
 a battery integrated with the first shell, wherein the battery is formed as one or more layers integral to the first shell, wherein the battery is formed on the first shell; and
 a capacitor formed on the first shell.
- 30 - 53. (Cancelled)

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54. (Previously presented) An integrated combined battery and device shell apparatus comprising:

an outer shell for an electronics device;

a first conductive layer deposited on a first surface area of the shell;

a second conductive layer deposited on a second surface area of the shell; and

a battery comprising a cathode layer; an electrolyte layer, and an anode layer deposited

such that the cathode layer is in electrical contact with the first conductive layer, the anode layer is in electrical contact with the second conductive layer, and the electrolyte layer is in contact with and completely separating the anode layer and the cathode layer, wherein the anode or the cathode or both include an intercalation material or a metal or both.

55. (Original) The apparatus according to claim 54, wherein:

the cathode layer comprises a lithium intercalation material deposited on the first conductive layer; and

the electrolyte layer comprises LiPON.

56. (Original) The apparatus according to claim 54, wherein:

the cathode layer comprises lithium cobalt oxide deposited on the first conductive layer;

and

the electrolyte layer comprises LiPON.

57. (Original) The apparatus according to claim 54, wherein:

the electrolyte layer comprises LiPON; and

the anode layer comprises a lithium intercalation material deposited on the electrolyte layer.

58. (Original) The apparatus according to claim 54, wherein:

the outer shell has a curved shape having a convex face and a concave face, and the battery is located on the concave face.

59 – 60. Cancelled

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61. (Currently amended) ~~The device of claim 59~~ An electrically powered device comprising:
first enclosure portion means for enclosing the device, the first enclosure portion means
shaped to form a convex outer surface case of the device; and
means for storing electrical energy manufactured as part of the first enclosure portion
means of the case by successively depositing thin-film battery layers onto the first enclosure
means, a surface of which forms the case's outer surface, wherein the first enclosure portion
means is rolled upon itself.

62. (Currently amended) The device of claim ~~59~~ 61, wherein the first enclosure portion
means is rolled upon itself around an electrical motor, the device further comprising:
a shaft operatively coupled to the motor; and
a chuck placed upon the shaft to form a hand-held drill for homeowner use.

63. (Currently amended) The device of claim ~~59~~ 61, wherein the first enclosure portion
means is rolled upon itself, the device further comprising:
an LED light electrically coupled to the battery to form a flashlight.

64. (Previously presented) An electrically powered device comprising:
a first shell, wherein the first shell forms a portion of an enclosure for the device, the first
shell having a concave interior surface and a convex exterior surface; and
a battery integrated with the first shell, wherein the battery is formed as one or more
layers integral to the first shell,
wherein the first shell is rolled around an electrical motor, the device further comprising:
a shaft operatively coupled to the motor; and
a chuck placed upon the shaft to form a hand-held drill for homeowner use.

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65. (Previously presented) An electrically powered device comprising:
- a first shell, wherein the first shell forms a portion of an enclosure for the device, the first shell having a concave interior surface and a convex exterior surface; and
 - a battery integrated with the first shell, wherein the battery is formed as one or more layers integral to the first shell,
- wherein the first shell is rolled upon itself into a spiral, the device further comprising:
- an LED light electrically coupled to the battery to form a flashlight.
66. (Previously presented) An electrically powered device comprising:
- a first shell, wherein the first shell forms a portion of an enclosure for the device, the first shell having a concave interior surface and a convex exterior surface; and
 - a battery integrated with the first shell, wherein the battery is formed as one or more layers integral to the first shell,
- wherein the first shell forms at least a portion of an outer case for the electronics device, and further comprising:
- a first conductive layer deposited on a first surface area of the first shell;
 - a second conductive layer deposited on a second surface area of the first shell; and
 - wherein the battery is comprised of a cathode layer; an electrolyte layer, and an anode layer deposited such that the cathode layer is in electrical contact with the first conductive layer, the anode layer is in electrical contact with the second conductive layer, and the electrolyte layer in contact with and completely separating the anode layer and the cathode layer.
67. (Previously presented) The device of claim 66, wherein the cathode includes a metal.
68. (Previously presented) The device of claim 66, wherein the cathode includes an intercalation material and a metal.
69. (Previously presented) The device of claim 66, wherein the cathode includes a lithium intercalation material and lithium.
70. (Previously presented) The device of claim 66, wherein the anode includes an intercalation material and the cathode includes an intercalation material.

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71. (Previously presented) The device of claim 66, wherein the first shell forms a plastic outer case for the electronics device, wherein the battery includes a cathode layer; a lithium phosphorus oxynitride electrolyte layer, and an anode layer, and wherein the electrolyte layer is in contact with and completely separating the anode layer and the cathode layer, wherein the anode includes an intercalation material.

72. (Previously presented) The device of claim 66, wherein the anode includes an intercalation material.

73. (Previously presented) The device of claim 66, wherein the anode includes a metal.

74. (Previously presented) The device of claim 66, wherein the anode includes an intercalation material and a metal.

75. (Previously presented) The device of claim 66, wherein the anode includes a lithium intercalation material and lithium.

76. (Previously presented) An electrically powered device comprising:
a first shell, wherein the first shell forms a portion of an enclosure for the device, the first shell having a concave interior surface and a convex exterior surface; and
a battery integrated with the first shell, wherein the battery is formed as one or more layers integral to the first shell, wherein the first shell forms at least one portion of a pacemaker enclosure, the pacemaker further including an energy-receiving device coupled to recharge the battery, and a heart-stimulation lead coupled to receive energy supplied by the battery.

77. (Previously presented) The device of claim 76, wherein the energy-receiving device includes an antenna used to receive radio-frequency energy for recharging of the battery.

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78. (Previously presented) An electrically powered device comprising:
a first shell, wherein the first shell forms a portion of an enclosure for the device, the first shell having a concave interior surface and a convex exterior surface; and

a battery integrated with the first shell, wherein the battery is formed as one or more layers integral to the first shell, wherein the first shell has a shape having a convex surface opposite a concave surface, and is attached to an exterior surface of a watch, the watch further including a band attached to the enclosure and operative to strap onto a person's wrist.

79. (Previously presented) The device of claim 78, further comprising an energy-receiving device operatively coupled to recharge the battery.

80. (Previously presented) The device of claim 78, further comprising a solar cell operatively coupled to recharge the battery, and an LCD within the enclosure.

81 - 88. (Cancelled)

89. (Previously presented) The electrically powered device of claim 20, wherein the battery is formed on the exterior surface.

90 - 92. Cancelled

93. (Currently amended) An electrically powered device comprising:
first enclosure portion means for enclosing the device, the first enclosure portion means shaped to form a convex outer surface case of the device; and

means for storing electrical energy manufactured as part of the first enclosure portion means of the case by successively depositing thin-film layers for a battery onto the first enclosure means, a surface of which forms the case's outer surface,

wherein the ~~thin-film battery~~ means for storing electrical energy comprise successive thin-film layers that are deposited on a surface that becomes a fan-folded zigzag in the device once finished.

94 - 95. Cancelled

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96. (Previously presented) The device of claim 11, wherein at least a portion of the battery is sputtered on the first shell.

97. (Previously presented) The device of claim 28, wherein at least a portion of the battery is sputtered on the first shell.

98. (Currently amended) The device of claim 29, wherein at least a portion of the battery is sputtered on the ~~outer~~ first shell.

99. (Currently amended) The device of claim 54, wherein at least a portion of the battery is sputtered on the ~~first~~ outer shell.

100. (Currently amended) The device of claim 54, wherein there ~~are~~ is a plurality of contacts associated with the battery, wherein the contacts are configured to produce a plurality of different battery hook ups.

101. (Previously presented) An apparatus comprising:

- a first shell for an electronics device;
- a first conductive layer deposited on a first surface area of the first shell;
- a second conductive layer deposited on a second surface area of the first shell; and
- a thin-film lithium battery including a cathode layer; an electrolyte layer, and an anode layer deposited such that the cathode layer is in electrical contact with the first conductive layer, the anode layer is in electrical contact with the second conductive layer, and the electrolyte layer is in contact with and completely separating the anode layer and the cathode layer.

102. (Previously presented) The apparatus of claim 101, wherein:

- the cathode layer comprises a lithium intercalation material deposited on the first conductive layer; and
- the electrolyte layer comprises LiPON.

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103. (Previously presented) The apparatus of claim 101, wherein:
the cathode layer comprises lithium cobalt oxide deposited on the first conductive layer;
and
the electrolyte layer comprises LiPON.

104. (Previously presented) The apparatus of claim 101, wherein:
the electrolyte layer comprises LiPON; and
the anode layer comprises a lithium intercalation material deposited on the electrolyte layer.

105. (Currently amended) The apparatus of claim 101, wherein:
the ~~outer~~ first shell has a curved shape having a convex face and a concave face, and the battery is located on the concave face.

106. (Previously presented) The apparatus of claim 101, wherein the first shell is folded upon itself.

107. (Previously presented) The apparatus of claim 101, wherein the first shell is rolled upon itself.

108. (Previously presented) The apparatus of claim 101, wherein the first shell is rolled around an electrical motor, the device further comprising:
a shaft operatively coupled to the motor; and
a chuck placed upon the shaft to form a hand-held drill for homeowner use.

109. (Previously presented) The apparatus of claim 101, wherein the first shell is rolled upon itself, the device further comprising:
an LED light electrically coupled to the battery to form a flashlight.

110. (Previously presented) The apparatus of claim 101, wherein the cathode includes an intercalation material.

111. (Previously presented) The apparatus of claim 101, wherein the cathode includes a metal.

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112. (Previously presented) The apparatus of claim 101, wherein the cathode includes an intercalation material and a metal.

113. (Previously presented) The apparatus of claim 101, wherein the cathode includes a lithium intercalation material and lithium.

114. (Previously presented) The apparatus of claim 101, wherein the anode includes an intercalation material and the cathode includes an intercalation material.

115. (Previously presented) The device of claim 101, wherein the first shell forms at least one portion of a pacemaker enclosure, the pacemaker further including an energy-receiving device coupled to recharge the battery, and a heart-stimulation lead coupled to receive energy supplied by the battery.

116. (Previously presented) The device of claim 101, wherein the energy-receiving device includes an antenna used to receive radio-frequency energy for recharging of the battery.

117. (Previously presented) The device of claim 101, wherein the first shell has a shape having a convex surface opposite a concave surface, and is attached to an exterior surface of a watch, the watch further including a band attached to the enclosure and operative to strap onto a person's wrist.

118. (Previously presented) The device of claim 117, further comprising an energy-receiving device operatively coupled to recharge the battery.

119. (Previously presented) The device of claim 117, further comprising a solar cell operatively coupled to recharge the battery, and an LCD within the enclosure.

120. (Previously presented) The device of claim 66, wherein the cathode includes an intercalation material.

121. (Previously presented) The apparatus of claim 54, wherein the battery includes thin-film layers that are successively deposited by sputtering on the first shell.